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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,850	06/28/2001	James M. Kronrod	108339-00035	3138

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EXAMINER

HE, AMY

ART UNIT PAPER NUMBER

2858

DATE MAILED: 09/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/892,850

Applicant(s)

KRONROD ET AL.

Examiner

Amy He

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-21 and 27-51 is/are allowed.
- 6) ☒ Claim(s) 22-26 and 52-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 27 June 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 22-25 and 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pepper (U. S. Patent No. 4, 713, 607), in view of Eastman (U. S. Patent No. 720, 335).

Referring to claims 22 and 52, Pepper discloses a system (in Figure 1) for measuring a current of a circuit comprising:

a first circuit (24);

a power plane/a power plane means (power plane connecting power supply 22) feeding said first circuit (14);

a power strip/power strip means (12) disposed in said PCB connecting a first power supply (22) to said power plane and having at least two vias (18 and 20) for measuring a voltage drop;

a second circuit/calculating means (the combination of reference voltage means 14 and the comparator 16) configured to measure a first voltage drop across said power strip as a first voltage.

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Pepper does not specifically disclose measuring a temperature of said power strip.

Eastman discloses that the resistance of a power strip varies with the temperature (column 1 line 17-column 2 line 63).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Pepper to compensate for resistance variations caused by temperature variations, as taught by Eastman, in order to calculate the current through the power strip more accurately, by measuring a temperature of the power strip and counting in the effect of the temperature variations into the calculation of resistance, and therefore obtaining a more accurate current value from the more accurately determined resistance value, instead of the predetermined resistance value.

Still referring to claims 22 and 52, Pepper does not specifically disclose calculating the power consumed by said first circuit based on said first voltage and said temperature. However, with the voltage and current values from Pepper available at hand, a person of ordinary skill in the art at the time of the invention would find it obvious to further modify Pepper to calculate the power consumed by the load (using $P=V*I$).

Note that the recitation "for measuring core power of a circuit on a printed circuit board" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a

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structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Referring to claims 23 and 53, Pepper discloses power strip comprises copper (column 3, line 50). Pepper does not specifically disclose using pure copper for the power strip. A person of ordinary skill in the art at the time of the invention would find it obvious to further modify Pepper to choose pure copper for its good conductivity characteristics.

Referring to claims 24 and 54, Pepper discloses that said power strip/calibration strip has a known/predetermined length, width and thickness (column 6, claim 2).

Referring to claims 25 and 55, Pepper discloses that said power strip is made of a known material (copper, column 3, line 50) having a resistivity and a thermal coefficient.

2. Claims 26 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pepper (U. S. Patent No. 4, 713, 607) in view of Eastman (U. S. Patent No. 720, 335), and further in view of Fried et al. (U. S. Patent No. 6, 023, 138).

Referring to claims 26 and 56, Pepper in view of Eastman discloses the system of claims 22 and 52.

Pepper in view of Eastman does not specifically disclose a differencing circuit or an operational amplifier circuit configured to measure said first and second voltage; an analog to digital converter configured to receive the voltage signals and to convert said signals into digital signals; and a CPU/calculation circuit configured to receive the digital signals and perform said power calculation.

Fried discloses (in Figure 1) a differencing circuit or an operational amplifier circuit (31) for amplifying the analog voltage signals; an analog to digital converter (32) for converting the analog voltage signals into digital form to be processed by a processor (35) that could performs the power calculation.

A person of ordinary skill in the art at the time of the invention would find it obvious to further modify Pepper to use the differencing circuit or the op amp circuit, and the analog to digital converter and the microprocessor, as taught by Fried, in order to improve the accuracy of the power calculation by using a op amp circuit for amplifying the voltage signals to a certain level, and converting the analog signal into digital forms acceptable by the microprocessor.

3. Claims 22 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minneman et al. (U. S. Patent No. 5, 386, 188), in view of Eastman (U. S. Patent No. 720, 335).

Referring to claims 22 and 52, Minneman discloses a system (in Figure 2) for measuring current comprising:

a first circuit (14);

a power plane/ power plane means (power plane connecting current source 16) feeding said first circuit (14);

a power strip/power strip means (12, column 3, lines 31-33) disposed in said PCB connecting a first power supply (16) to said power plane and having at least two vias (2 contact points of 12) for measuring a voltage drop;

a second circuit/calculating means (18 or the combination of 18, 20, 22 and 26) configured to measure a first voltage drop across said power strip as a first voltage.

Minneman does not specifically disclose measuring a temperature of said power strip and performing a power calculation by calculating the power being consumed by said first circuit based on said first voltage and said temperature

Eastman discloses that the resistance of a power strip varies with the temperature (column 1 line 17-column 2 line 63).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Minneman to measure the temperature of said power strip and performing a power calculation for the same reasons as stated earlier for the rejection of claims 22 and 52 using Pepper in view of Eastman.

4. Claims 23-25 and 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minneman et al. (U. S. Patent No. 5, 386, 188), in view of

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Eastman (U. S. Patent No. 720, 335), and further in view of the applicant submitted references, "Using PCB as a Current Shunt", Electronics World and Wireless World.

Referring to claim 23-25 and 53-55, Minneman discloses that said power strip could be a component lead, wire or printed circuit trace (column 3, lines 31-33). Minneman does not specifically disclose that said power strip comprise substantially pure copper, has a known/predetermined length, width, thickness, receptivity and thermal coefficient, and said power calculation is further based on those characteristics.

"Using PCB as a Current Shunt", as submitted by applicant, teaches using pure copper for the printed circuit trace (page1, column 1, lines 20-29).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to further modify Minneman to use a power strip comprises pure copper, as taught by "Using PCB as a Current Shunt", since pure copper is a good conductor suitable for carrying the current through the power strip. Pure copper is a known material having a known receptivity and thermal coefficient. The specific length, width and thickness of the power strip made of pure copper are based on the design. And power calculations are based on those material characteristics.

Response to Arguments

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5. Applicant's arguments filed on June 27, 2003 have been fully considered.

6. Applicant's arguments regarding claims 1-21, 27-51 are persuasive.

Accordingly, claims 1-21 and 27-51 have been allowed.

7. Applicant's arguments regarding claims 22-26 and 52-56 have been fully considered. But they are not persuasive. Regarding claims 22-26 and 52-56, Eastman does not disclose measuring a temperature because it is not needed in Eastman. However, Eastman discloses that the resistance of a power strip varies with the temperature (column 1 line 17-column 2 line 63). It would have been obvious to a person of ordinary skill in the art to modify Pepper to compensate for resistance variations caused by temperature variations, in order to more accurately calculate the current through the power strip by measuring a temperature of the power strip and counting in the effect of the temperature variations into the calculation of resistance, and therefore obtaining a more accurate current value from the more accurately determined resistance value, instead of using the predetermined resistance value which could be changed during testing due to the temperature changes.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory


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period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy He whose telephone number is (703) 305-3360. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on 703-308-0750. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.



AH
September 5, 2003



N. Le
Supervisory Patent Examiner
Technology Center 2800